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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/539,514	04/04/2006	Heinrich Becker	MERCK-3044	4802
23599 7590 12/28/2009 MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201				
EXAMINER CROUSE, BRETT ALAN				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
12/28/2009		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

docketing@mwzb.com

# Office Action Summary

**Application No.**

10/539,514

**Applicant(s)**

BECKER ET AL.

**Examiner**

Brett A. Crouse

**Art Unit**

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 September 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-30 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-30 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/22)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. This office action is in response to the amendment, filed 10 September 2009.

*Status of Claims*

2. Claims 1, 5, 20 are amended. Claims 1-30 are pending.

*Response to Amendment*

3. The objection to the specification is overcome by the amendment, filed 10 September 2009.
4. The objections to claims 5 and 20 are overcome by the amendment, filed 10 September 2009.

*Claim Rejections - 35 USC § 103*

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17, 18, 21, 23, 24, 25, 26, 28, 29, 30 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Allen et al., WO 99/32537.

Allen teaches:

As to claims 1, 2, 6, 9, 21

Page 9, line 6 through page 10, line 5, abstract, formula (1), teach a polymeric material of formula (1) useful in electroluminescent devices as a charge transport material. The passage additionally teaches the number of repeat units can be between 2 and 20000.

Page 11, lines 10-35, teach addition uses for the polymers of formula (1).

Page 23, lines 23-31, teach a single or multi-layer electroluminescent device which further comprises a light emitting material in addition to a polymer of formula (1). The passage additionally teaches one or more polymers of formula (1) can be used alone or in combination as an admixture.

Page 14, line 27 through page 15, line 7, teaches the variables n and m and their meaning relative to the polymer.

Page 19, lines 16-35, teach the preferred number of repeat units of the polymer is preferably 3 to 500, more preferably 4 to 200. The passage also teaches for the bulk polymer m is preferably 3 to 200, most preferably about 4 to about 50.

As to claims 3, 4:

Page, 9, lines 17-24, teach carbyl derived substituent groups having 1-40 carbon atoms.

Page 21, lines 21-33, teach carbyl-derived groups.

Page 22, lines 5-6, teach preferred carbyl-derived groups include alkyl and alkoxy.

As to claims 5:

Page 20, lines 1-5, teach a preferred range of polydispersity of 1.1 to 5.0.

As to claims 7, 17:

Page 11, lines 1-5, teach the polymers of formula (1) preferably have a hole mobility greater than  $0.01 \text{ cm}^2 / \text{volt sec}$ .

As to claims 8, 10, 11, 18, 29:

Page 11, line 37 through page 12, line 12, teach the polymer of formula (1) can be admixed with other polymeric or non-polymeric materials having different electrical or physical properties. The passage additionally teaches various deposition techniques for the material(s) including dip coating, roller coating, reverse roll coating, bar coating, spin coating, gravure coating, lithographic coating (including photolithographic processes), ink jet coating (including continuous and drop-on-demand, and fired by piezo or thermal processes), screen coating, spray coating and web coating. The passage additionally teaches the polymeric material layer in contact with metallic or non-metallic materials in order to give a functioning device.

As to claims 23, 24:

Page 24, lines 28-33, teach the compositions of polymers of formula (1) can include a solvent.

Page 24, line 34 through page 25 line 9, teach various binder materials for use in combination with polymers of formula (1).

As to claims 25, 26:

Page 12, line 37 through page 13, line 25, provides additional teachings of the end capping groups. The passage additionally teaches the average molecular weight is greater than about 1000 Daltons. The passage additionally teaches the polymer can be cross-linked. The passage additionally teaches the polymer can be substantially polydisperse. Page 18, lines 7-8 and 22-27, teach branched and cross-linked structures.

As to claims 28:

Page 68, lines 30-35, teach applying a semi-transparent electrode layer to a structure comprising the polymer of formula (1). The structure is prepared as in test method 1, for the photoreceptors.

As to claims 30:

Page 68, lines 30-32, teach electrode deposition by vacuum deposition.

In the alternative:

If the example of a polymer of Allen between two electrodes and the teachings of the use of the polymers of Allen in electroluminescent devices is insufficient to render the application anticipated, it would have been obvious to one of ordinary skill in the art to use the materials of Allen in an electroluminescent device, as suggested by Allen.

7. Claims 12-16, 19, 20, 22, 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al., WO 99/32537, as applied to claims 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 17, 18, 21, 23, 24, 25, 26, 28, 29, 30 above, and further in view of Buechel et al., US 2002/0179900.

Allen does not recite:

Allen teaches the use of polymers of formula (1) in electroluminescent devices as well as multi-layer deposition. Allen teaches a multi-layer device structure having the charge transport material layer between two contact (electrode) layers.

Buechel is added to provide suitable device layer thicknesses for polymeric light emitting devices and suitable materials for the other layers of the device.

Buechel teaches:

As to claim 22:

Paragraph [0001], teaches an organic light emitting diode comprising a transparent electrode, a conductive polymer layer, a light emitting layer which can further comprise a polymeric or non-polymeric material.

Paragraph [0017], teaches the light emitting layer can be deposited by vacuum deposition.

As to claims 12-16:

Paragraph [0002], teaches typical thicknesses of the conductive polymer layer are 50 to 500 nanometers.

As to claims 19, 20:

Paragraph [0016], teaches an ITO electrode. The electrode can be deposited by vacuum deposition, sputtering or CVD.

It is the examiner's position that the materials of Allen being within the scope of the materials of the instant invention will possess ionization potentials as claimed in instant claim 20.

As to claims 27:

Paragraphs [0052]-[0072], examples 1-4, teach PPV as the light emitting polymer. PPV is a known blue emissive polymer.

It would have been obvious to one of ordinary skill in the art to use the device dimensions of Buechel for the device of Allen with the expectation that the layer thicknesses would be suitable for a polymeric charge transport layer as discussed by Buechel.

It would have been obvious to use the materials anode and light emitting layers of the device of Buechel with the expectation that they would function suitably with a hole transport layer as suggested by Buechel.

### ***Response to Arguments***

8. Applicant's arguments have been fully considered but they are not persuasive.

Applicant argues opposite Allen that the reference does not constitute an anticipatory reference because the reference does not disclose every element of the claims and that one would have to pick and choose from a large number of materials to arrive at the claimed invention. Applicant cites *In re Sivaramakrishnan* in support of this argument. The examiner respectfully disagrees for the reasons below.

Allen both teaches and claims an electroluminescent device comprising the polymers of his invention. Allen specifically teaches and claims in an electroluminescent device inventive



polymers of formula (1) including polymers having greater than 40 repeat units of formula (1). Attention is directed to claims 22, 18, and 17 and to the referenced disclosure above.

With regard to *In re Sivaramakrishnan* there is no need to select from a large number of materials to arrive at the claimed invention as the claims are directed to a device comprising a single material of formula (1). No combination of materials needs to be formed by selection of multiple materials. Additionally, Allen provides in the examples and claims exemplified polymers as contemplated by applicant.

With regard to the declaration filed, 5 October 2009, the showing cannot be used to overcome the rejection under 35 USC 102.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. C./  
Examiner, Art Unit 1794

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit  
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